EOS Aura Science Team Meeting
Pasadena, CA, 1-5 October 2007

Absorbing Aerosols as seen by OMI and the A-train

Omar Torres
*JCET/University of Maryland Baltimore County*
Changwoo Ahn
Science Systems and Applications Inc.

*Greece Fires, August 27, 2007*

OMI Near UV Aerosol Product

-TOMS heritage

-Uses as input radiances as two near UV channels: 354 and 388 nm

-Pixel size: 13x24 km at nadir

-Retrieved Products: Absorbing Aerosol Index (AAI)
      388 Aerosol Extinction Optical Depth (AOD)
      388 Aerosol Single Scattering Albedo (SSA)

Aerosol Absorption Optical Depth is calculated as
    AAOD = AOD (1.0-SSA)

Aerosol Abs. Optical Depth
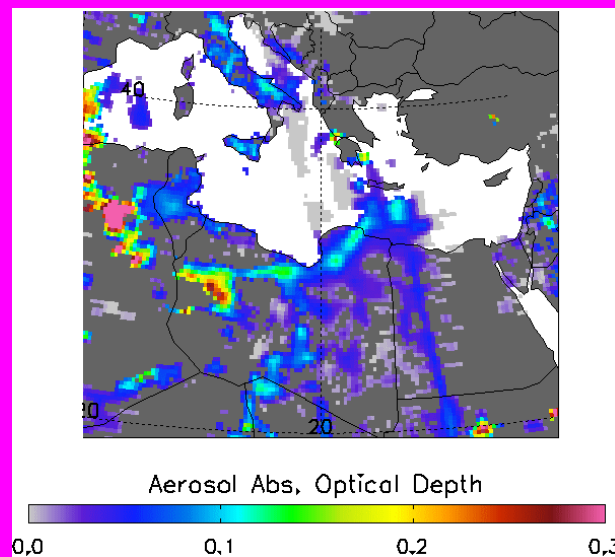
Retrieved AAOD on August 27, 2007

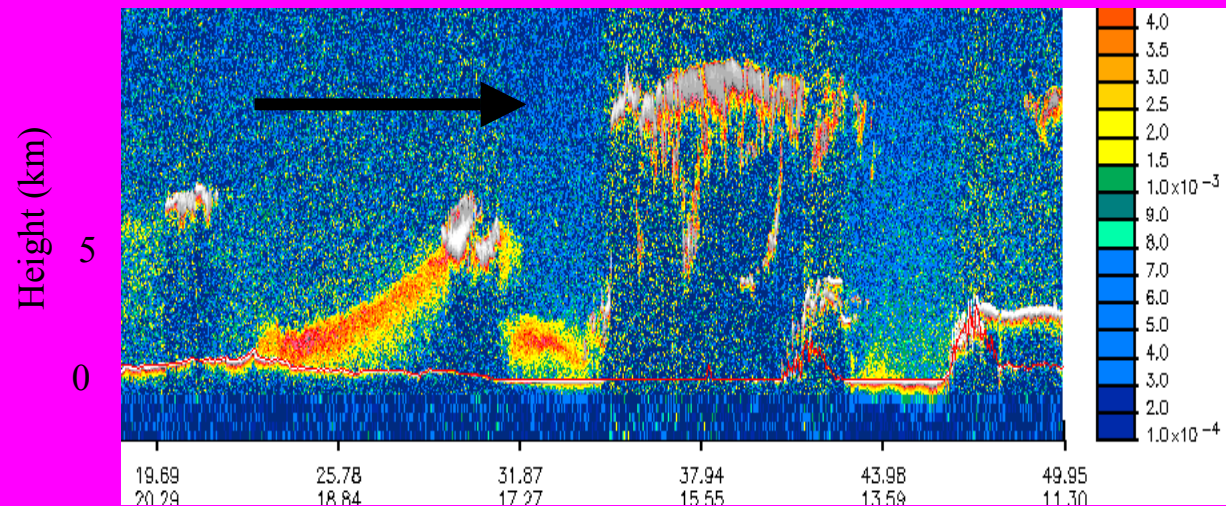# Aura is one of seven satellites in the A-train
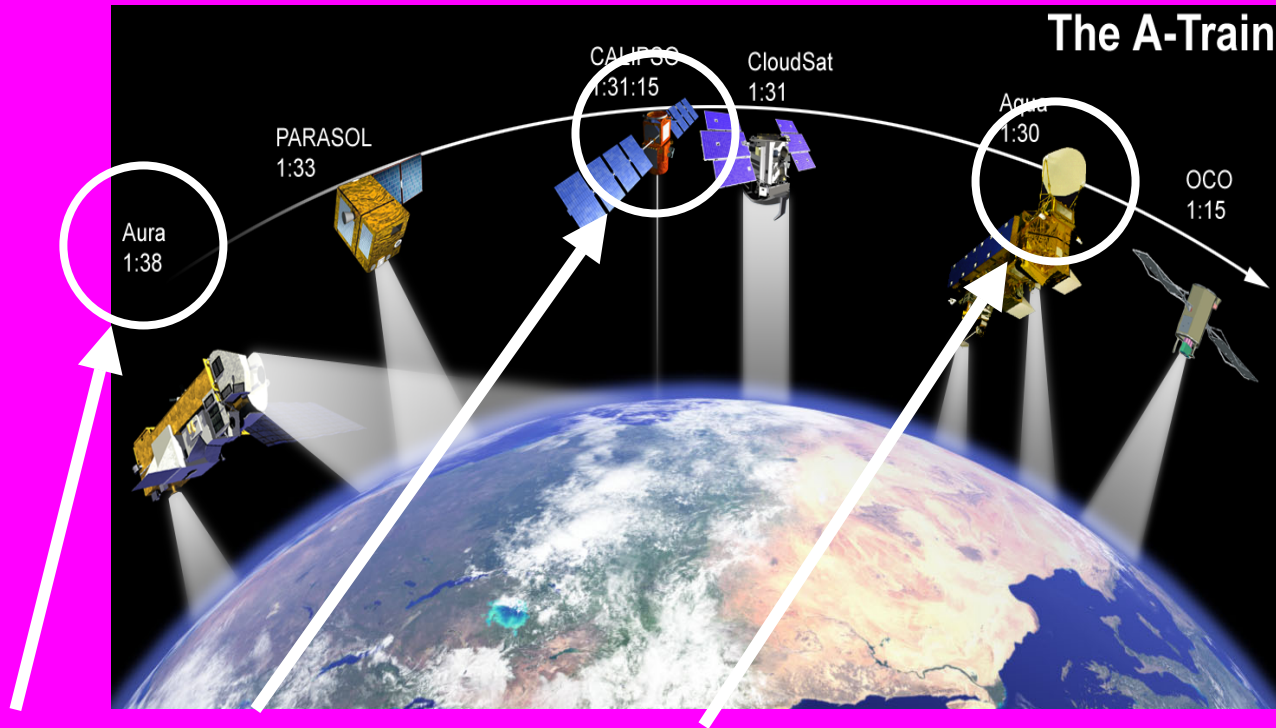
Aura-OMI, Calipso and Aqua-MODIS observations are highlighted in this presentation
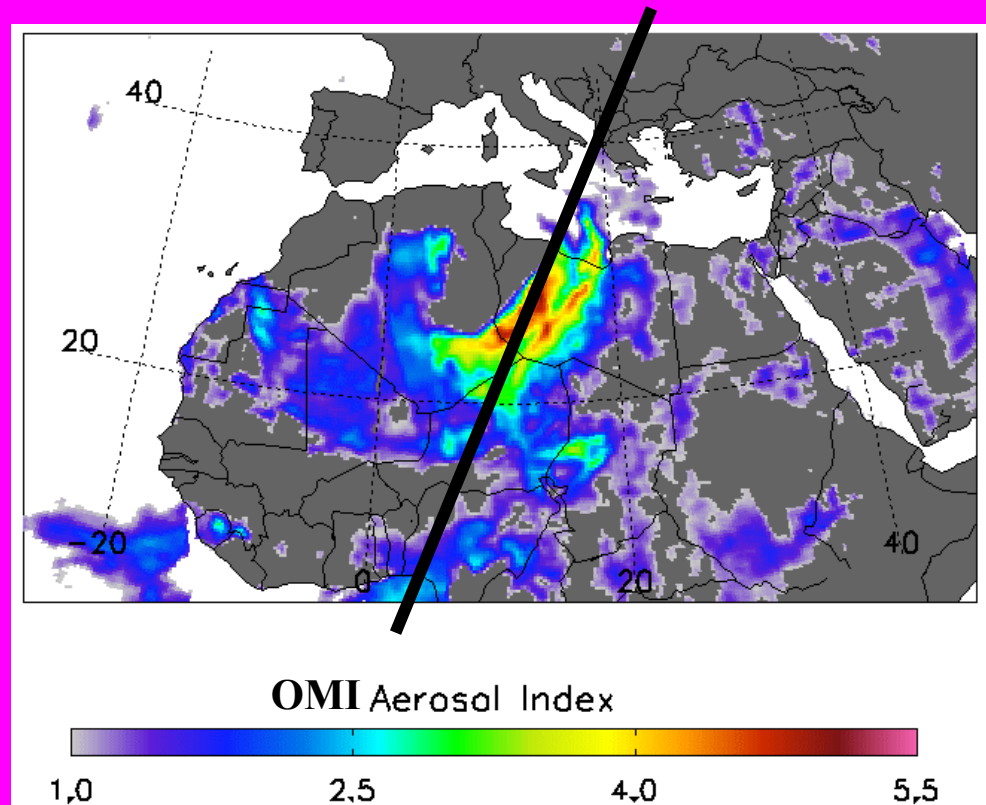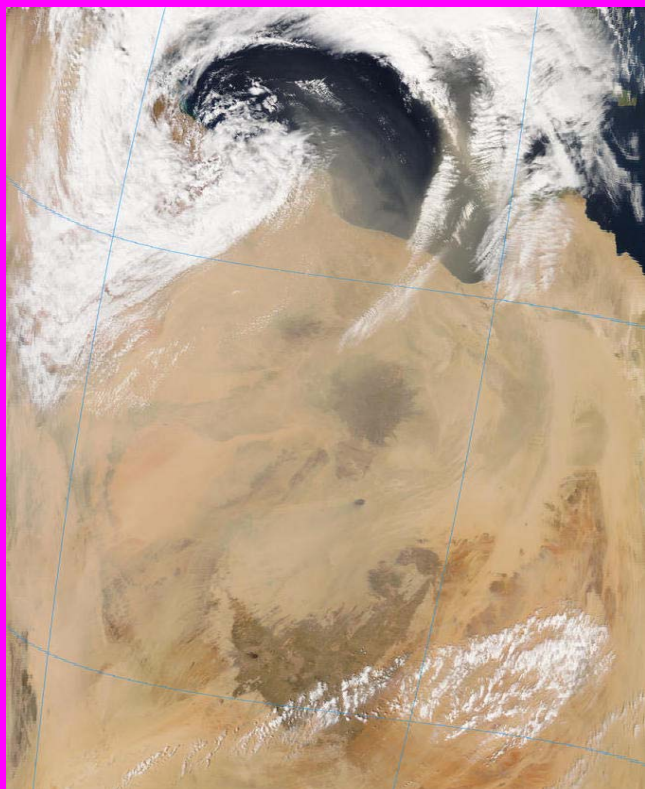
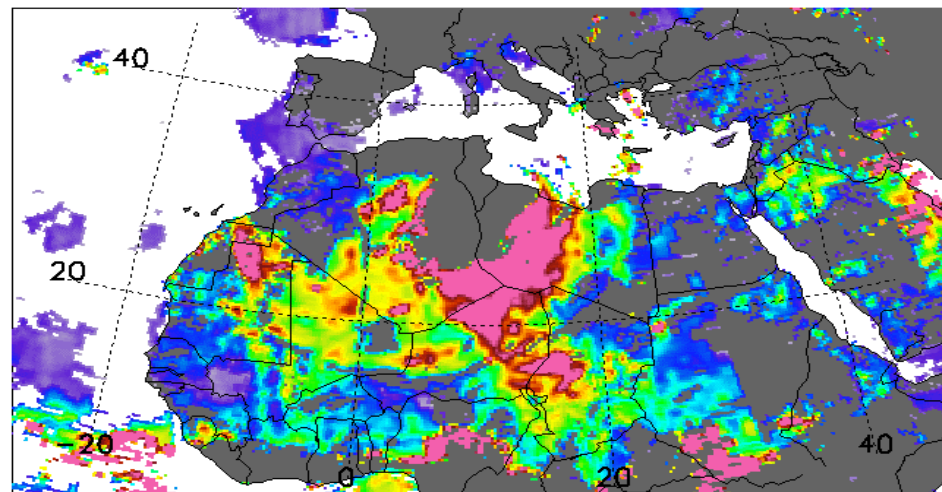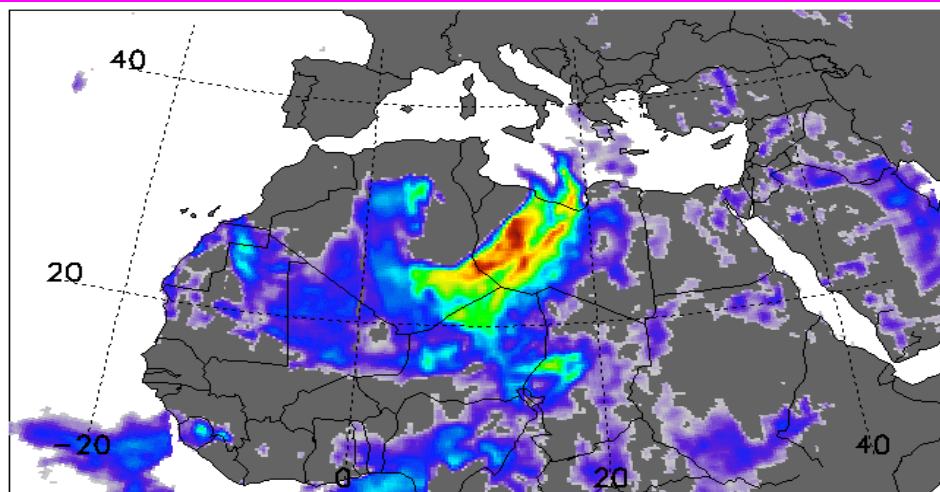**Parasol, Aqua-AIRS, and Glory-APS (not shown) also measure aerosol properties**

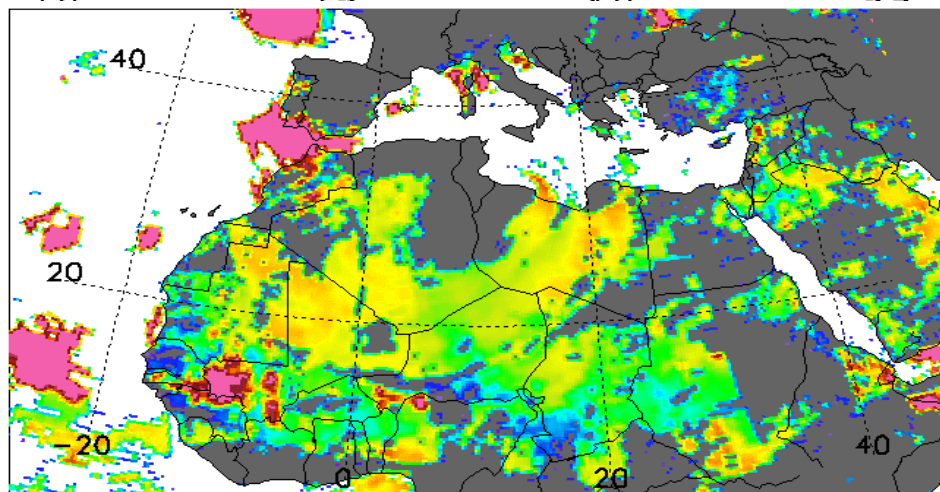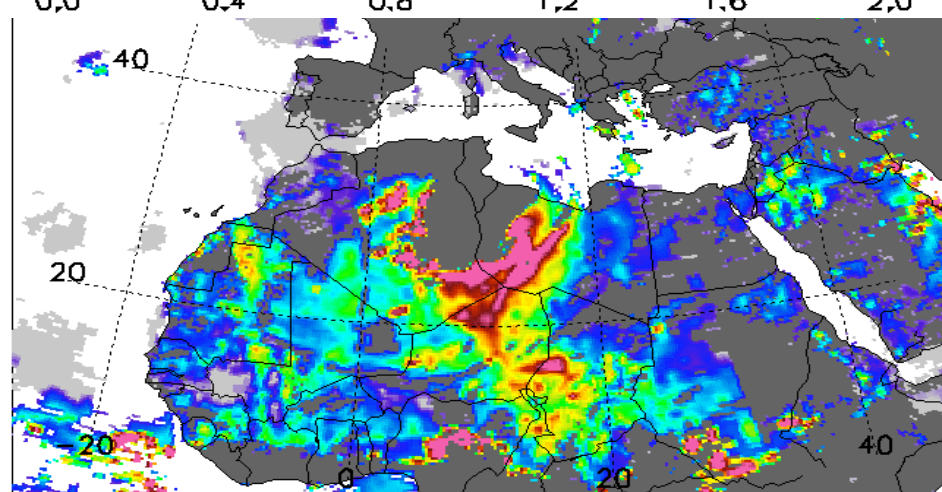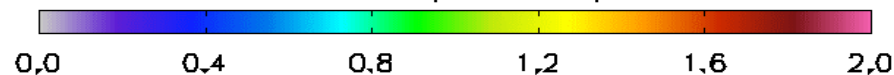# Dust Storm outbreak on March 9, 2007

MODIS RGB

OMI Aerosol Index

OMI Retrieved Aerosol Properties
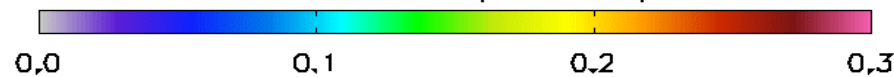

Aerosol Index

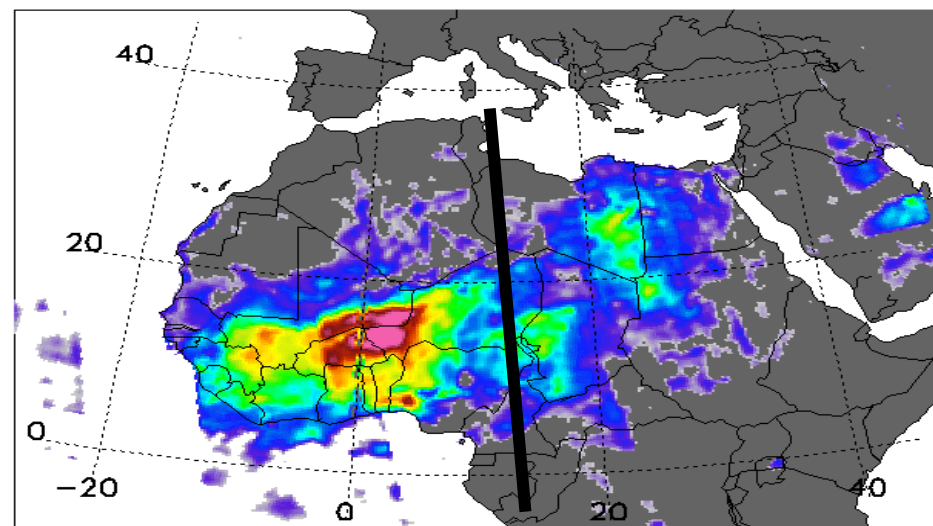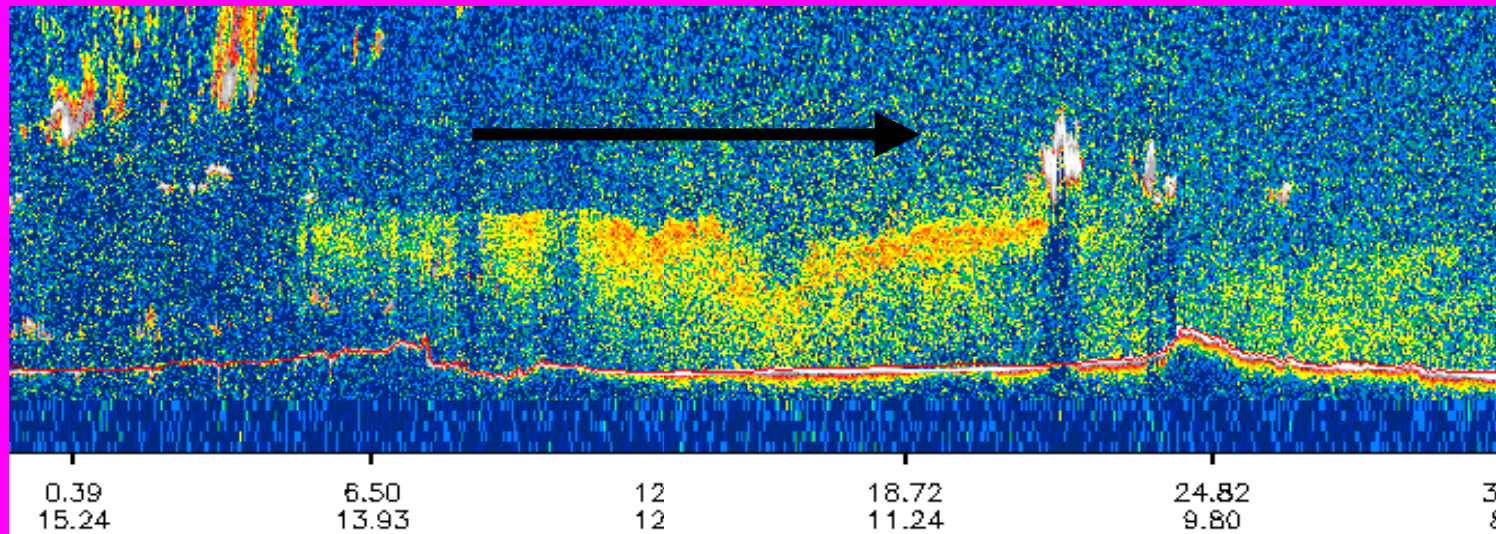Aerosol Optical Depth
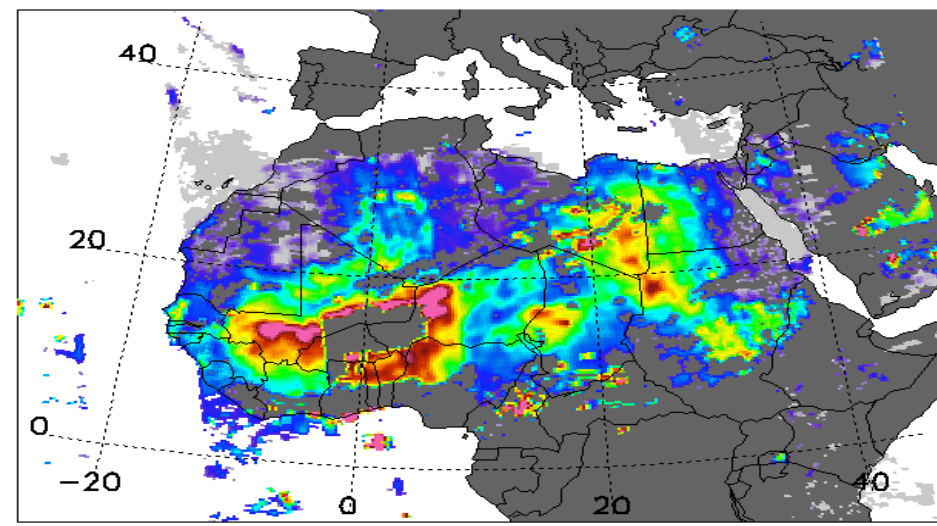
Single Scattering Albedo

Aerosol Abs. Optical Depth

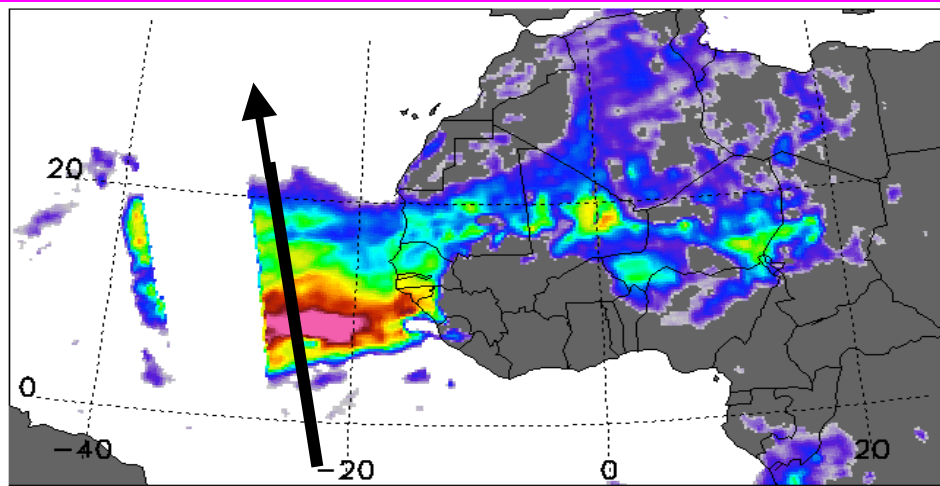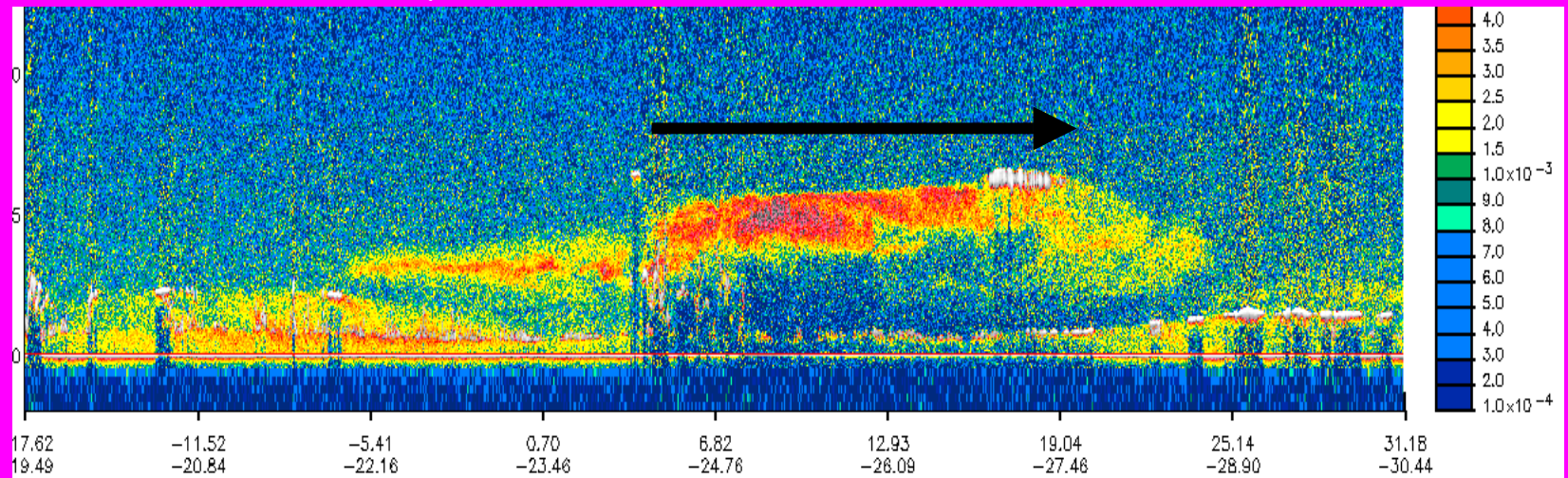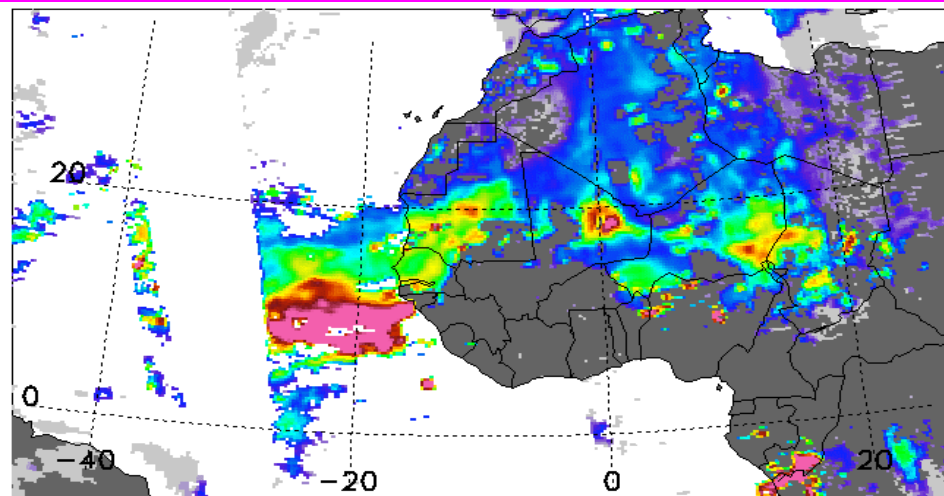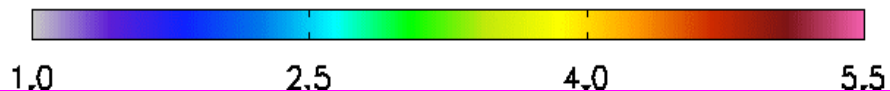# Dust uplifting over Lake Chad, April 4, 2007

Aerosol Index

Aerosol Abs. Optical Depth

Saharan Dust Layer over Atlantic Ocean on June 22, 2007

Aerosol Index
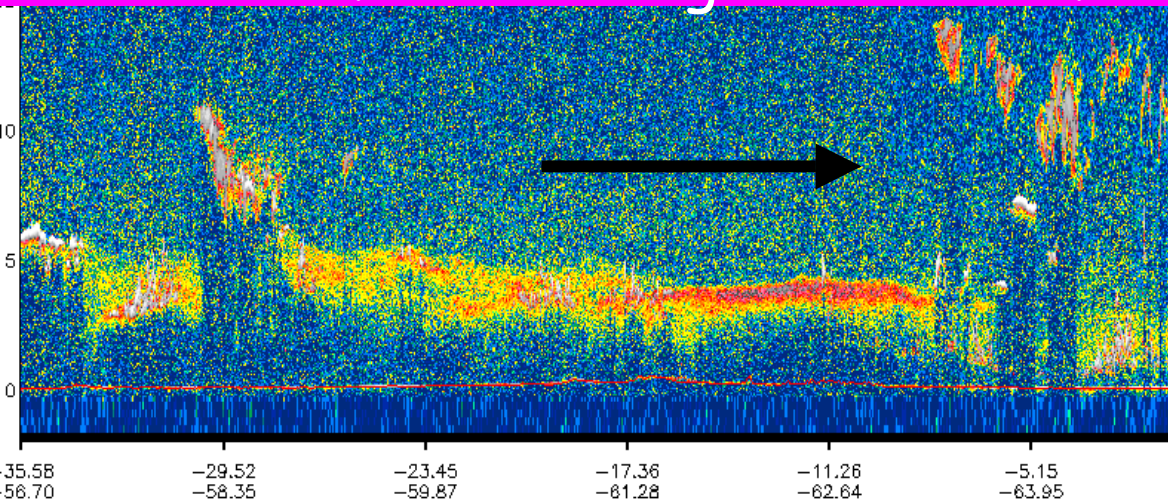
Aerosol Abs. Optical Depth

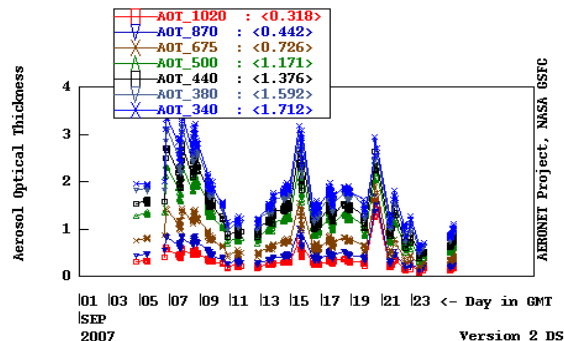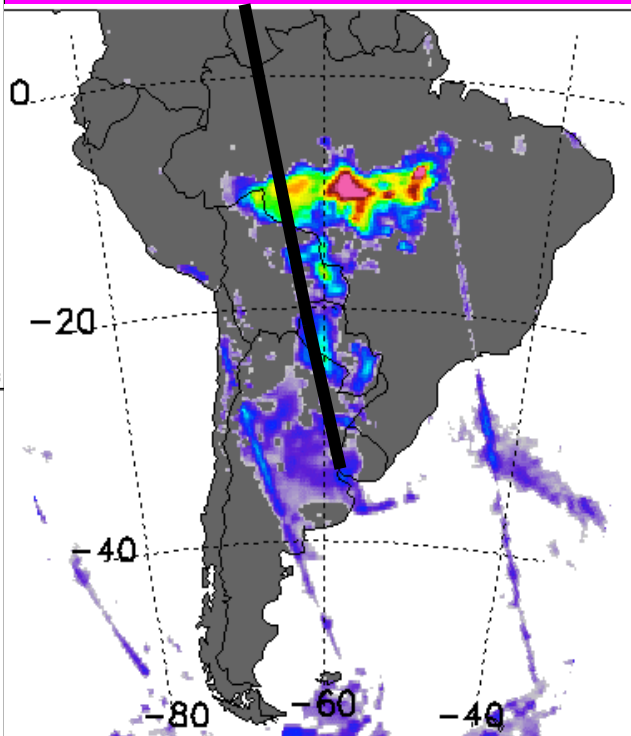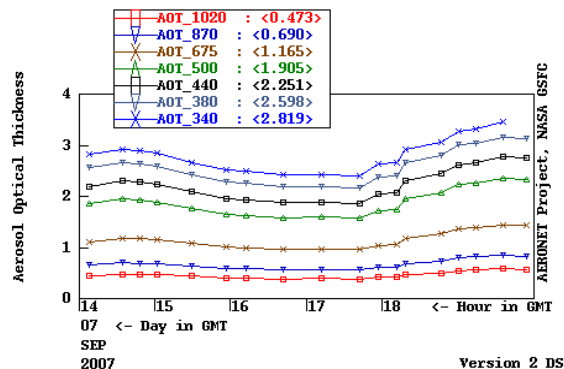# Biomass Burning in South America, Sept 6-2007

Wave Activity as seen by Calipso on Sept. 14, 2007

Aerosol Index

Aerosol Abs, Optical Depth
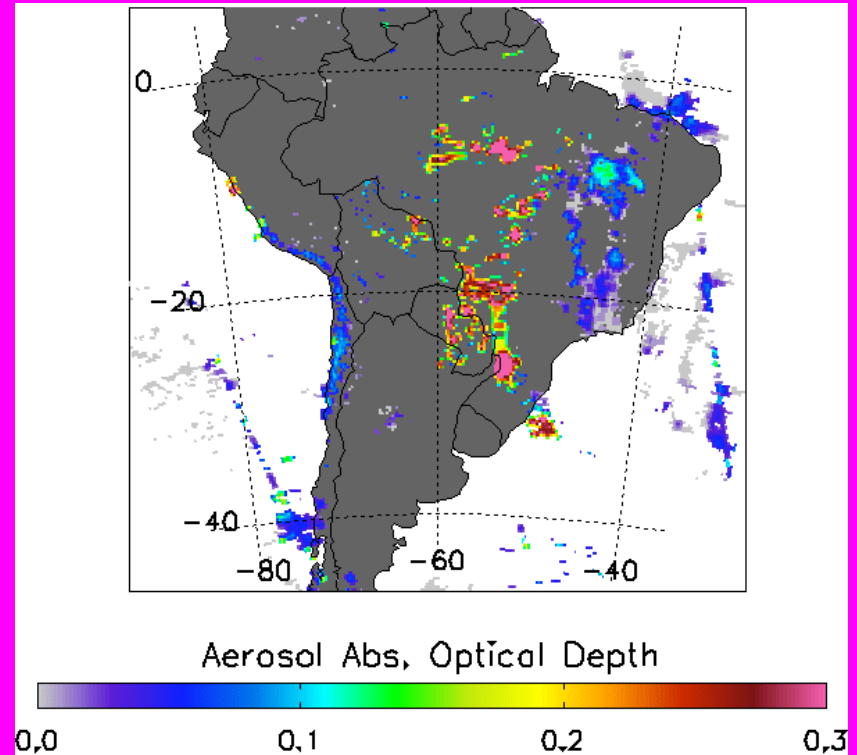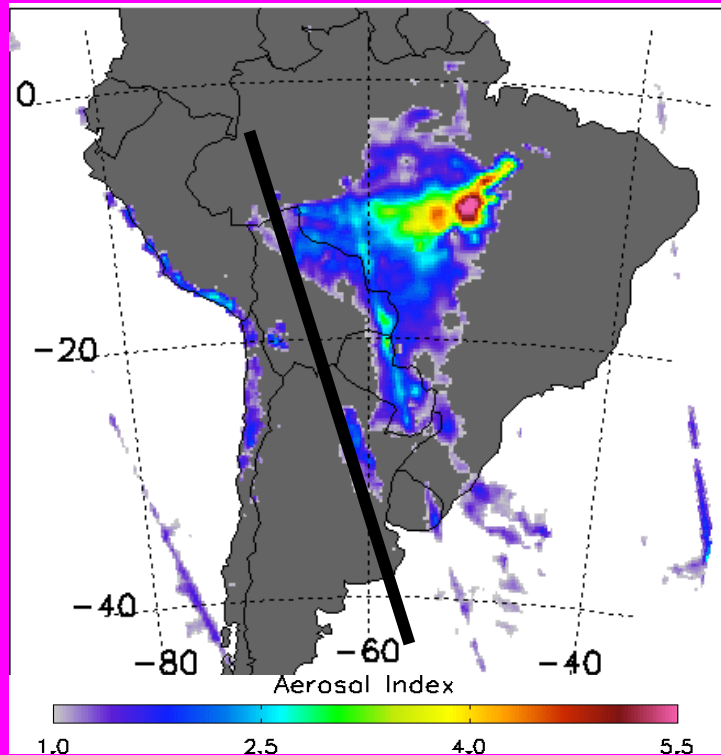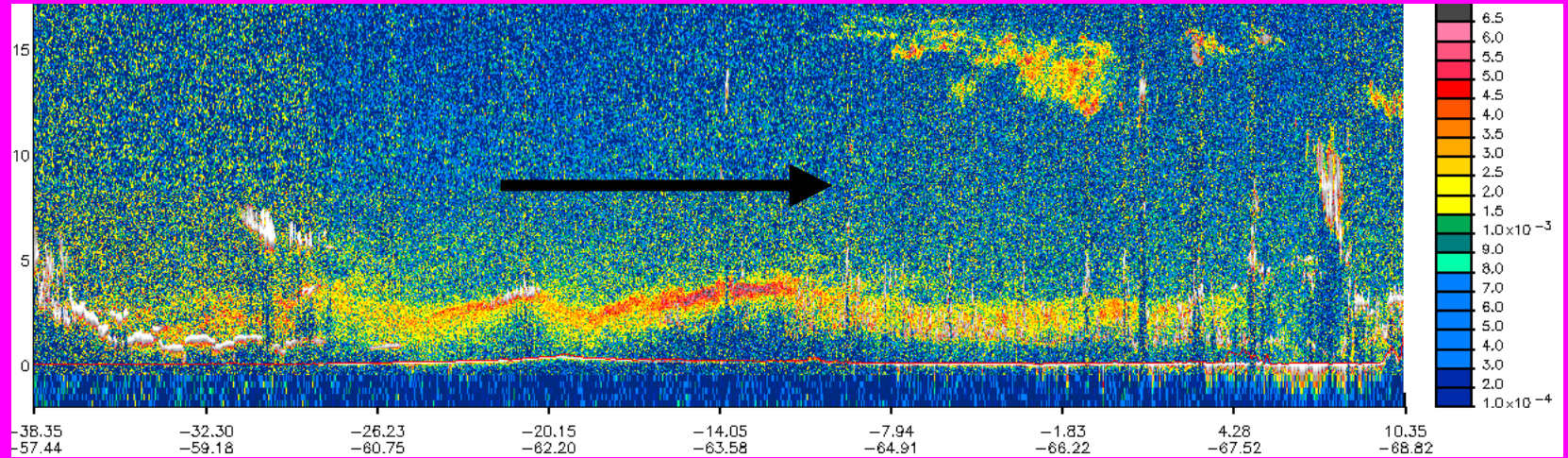
Detection of aerosols over clouds Sept 16, 2007

MODIS RGB

Aerosol Index
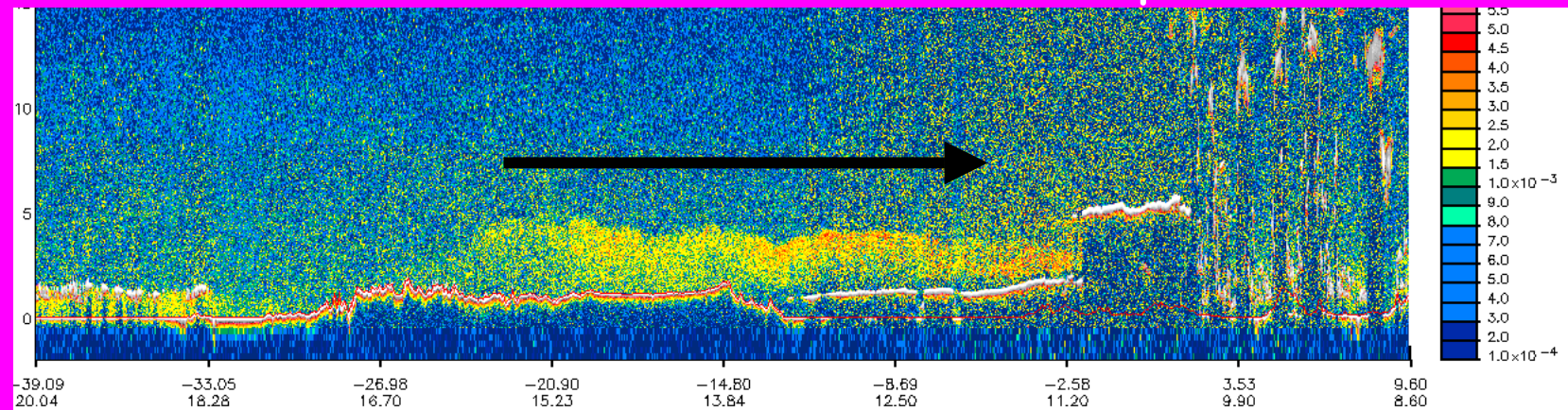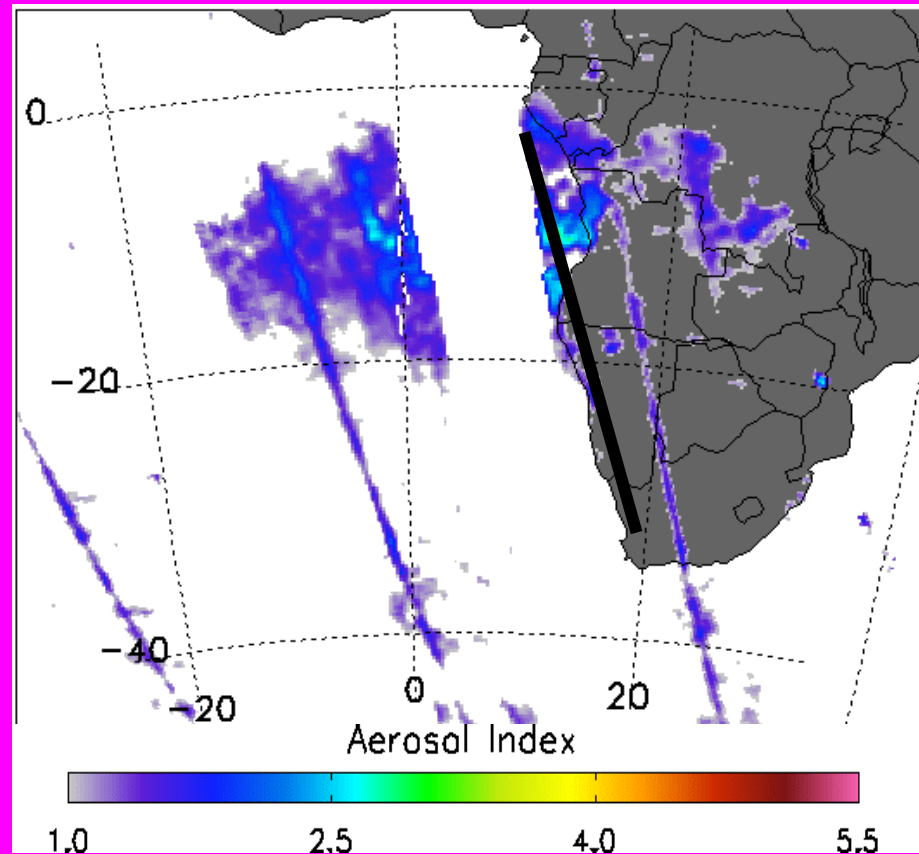
Comparison of OMI and AERONET Retrievals of Single Scattering Albedo and absorption optical depth of dust aerosols
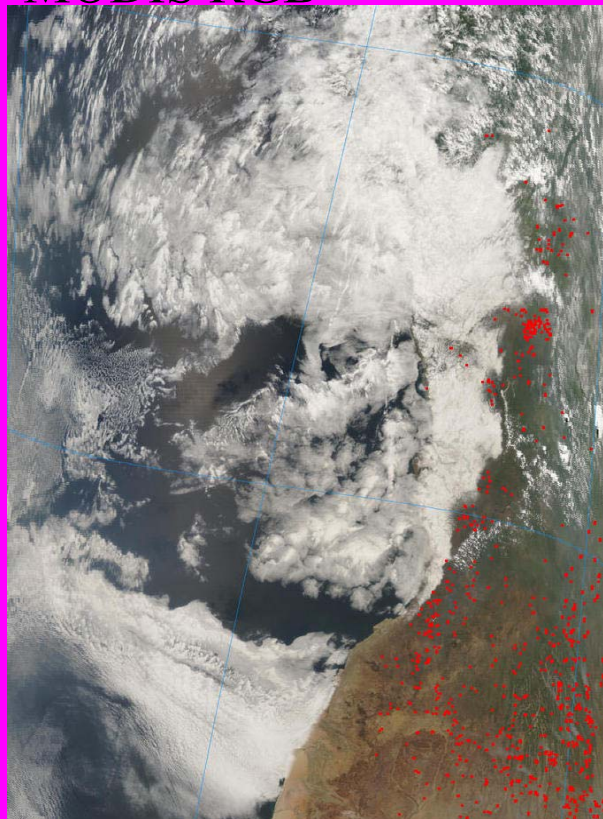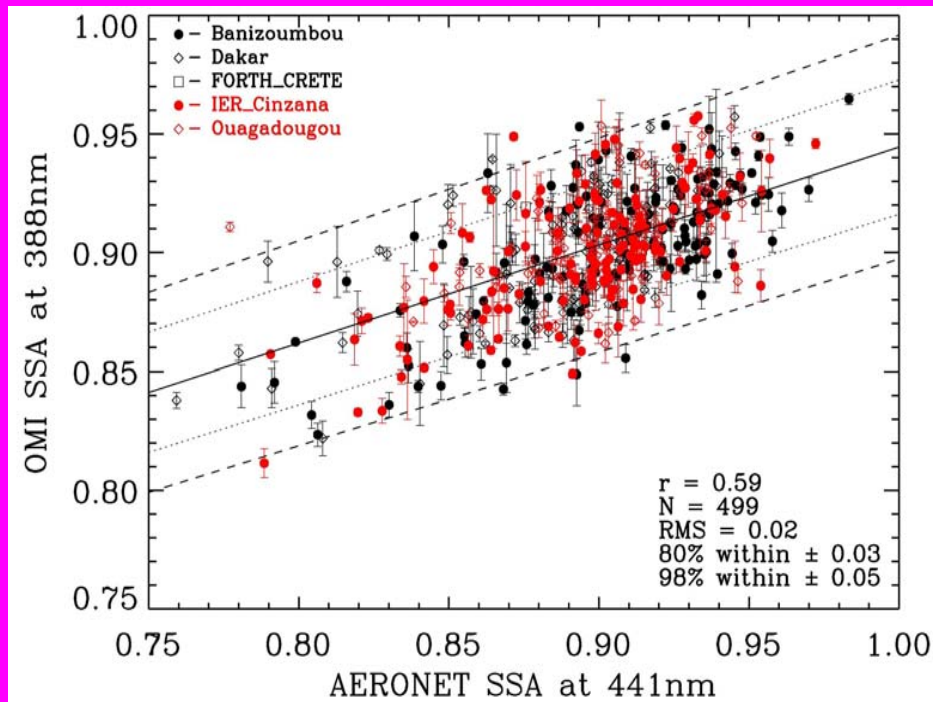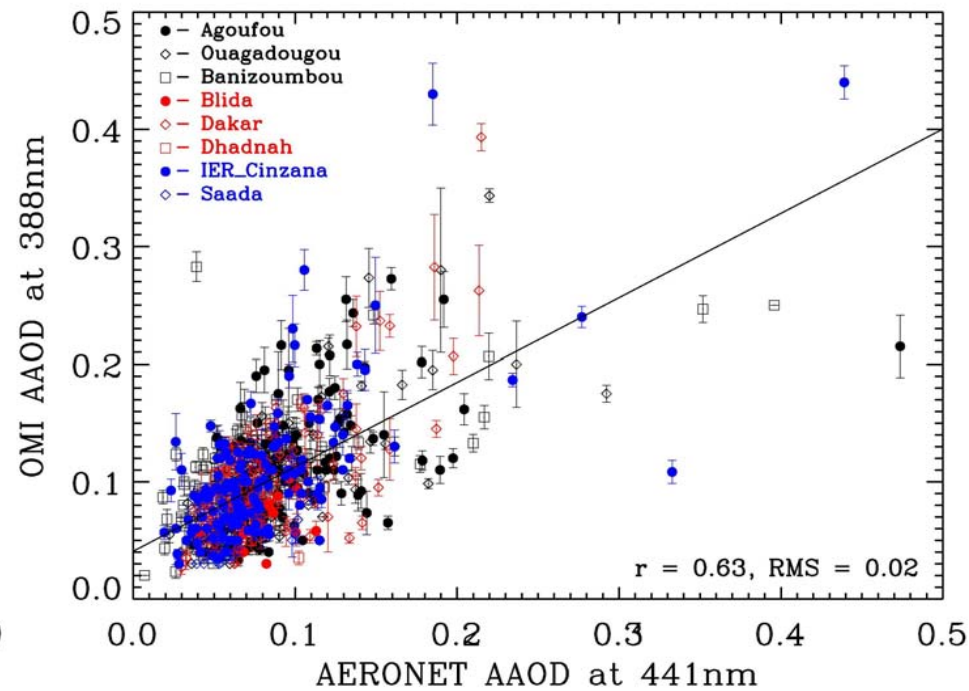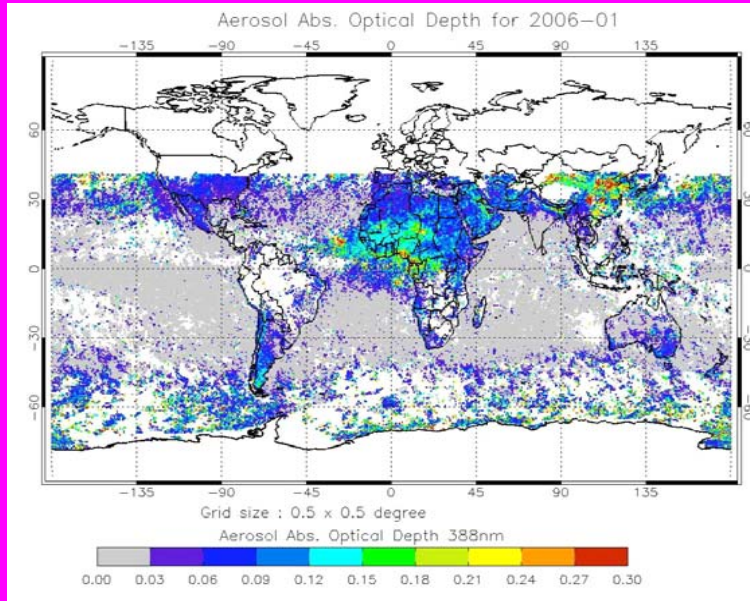

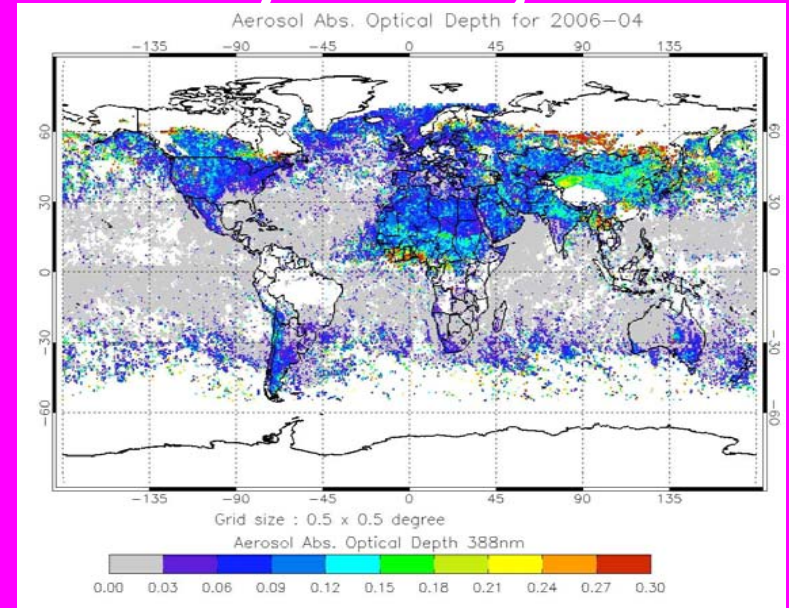**Single Scattering Albedo**
R = 0.59
RMS = 0.02

Absorption Optical Depth
R = 0.63
RMS = 0.02

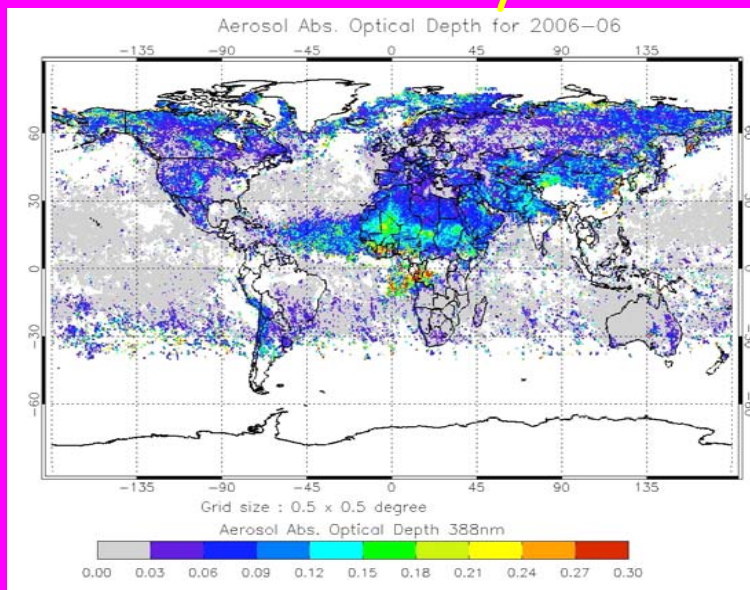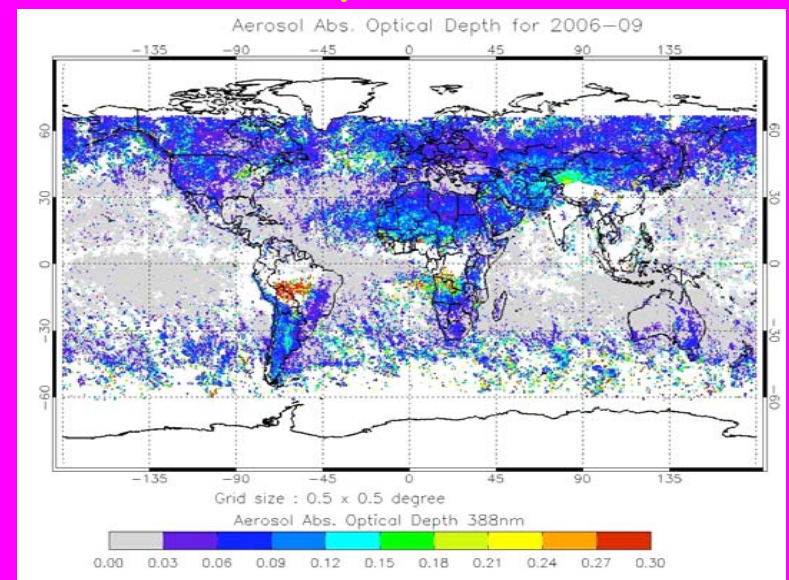# OMI AAOD 2006 Monthly Averages

January

April

June

September

Concluding Remarks

-OMI's greatest advantage for aerosol remote sensing is its near UV capability to detect and characterize aerosol absorption effects.

-OMI aerosol absorption measurements provide information on an important aerosol property not available from aerosol dedicated sensors.

-The combined use of OMI aerosol absorption measurements with observations by other A-train provides a more complete characterization of the atmospheric aerosol load.

Future Work

-Combined retrievals using OMI, Calipso, MODIS and AIRS observations (NASA funding for these activities has been obtained).

-OMI near UV retrieval capabilities will be extended to aerosol-cloud mixtures.